UNITED STATES PATENT OFFICE

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GIRDLE AND RESILIENT SUPPORT

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14 Claims. (Cl. 2—36)

1 My invention relates to girdles or like garments and to resilient means for supporting a portion of the garment or holding the same in proper place upon the user.

An important object of the invention is to provide resilient means which will properly support the upper portion of the girdle, will retain such upper portion close to the body of the wearer and has a high degree of lateral flexing action to permit of the bending or stooping of the body adjacent to the waistline without discomfort to the user.

A further object of the invention is to provide a resilient supporting element which is light, simple in construction, durable and will promote the comfort of the wearer.

A further object of the invention is to provide a supporting element of the above-mentioned character which has a resilient compression action against downward movement and a torsional resilient action against lateral or bending movement.

A further object of the invention is to provide a resilient supporting element of the above-mentioned character which may be formed thin, light, strong and durable.

Other objects and advantages of the invention will be apparent during the course of the following description.

This application is a continuation in part of my application for girdles, Serial No. 506, filed January 3, 1949.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a front perspective view of a garment embodying my invention, showing the same in use.

Figure 2 is a side elevation of the garment in use, showing the body in the forward bent position, and illustrating the bending action of the resilient supporting element adjacent to the waistline.

Figure 3 is a front elevation of the front panel, a portion of the same being removed and the front layer of the pocket being removed, for the purpose of illustration.

Figure 4a is an enlarged vertical section taken on line 4a—4a of Figure 3.

Figure 4 is an enlarged side elevation of the resilient supporting element, parts broken away.

Figure 5 is a transverse section taken on line 5—5 of Figure 4.

Figure 6 is similar view taken on line 6—6 of Figure 4.

Figure 7 is a similar view taken on line 7—7 of Figure 4.

Figure 8 is a horizontal section taken on line 8—8 of Figure 4.

Figure 9 is a similar view taken on line 9—9 of Figure 3.

Figure 10 is a similar view on line 10—10 of Figure 3.

Figure 11 is a view similar to Figure 4a, showing a modified form of the invention.

Figure 12 is a vertical section on line 12—12 of Figure 11, and

Figure 13 is a side elevation of a modified form of resilient supporting element.

In the drawings, the numeral 20 designates an elastic girdle as a whole, comprising sides 21 and a back 22, preferably formed integral and made from an elastic fabric having a horizontal and vertical stretch. Attached to the top of the sides 21 and back 22 is a horizontal elastic band 23, having short vertical stiffening ribs 24. This band may be of the same construction as shown in my Patent 2,136,742. The waistband 25 is secured to the sides and back by a horizontal zigzag line of stitching 25. The girdle further comprises a front panel 26 which is preferably vertically elastic and horizontally non-elastic and secured to the sides 21 by vertical zigzag lines of stitching 27. The panel 26 is preferably provided at its bottom edge with an upwardly tapered insert or gore 28, secured thereto by a zigzag line of stitching 29. This gore is preferably horizontally and vertically elastic. Arranged upon the inner face of the front panel 26 is a pocket 30, including an inner side 31 and an outer side 32. These sides included in the pocket are secured to the panel 26 by the lines of stitching 27. The pocket is made from a single section of non-elastic fabric which is folded upon itself, forming a top rounded edge 33 and the pocket is originally open at its bottom and is closed by a horizontal line of stitching 34. The pocket is secured to the front panel 26 at its closed upper end by a horizontal line of stitching 35 which extends through the inner side 34 only. The pocket extends from the top edge of the front panel 26 and preferably terminates near the longitudinal center of the front panel, although this point of termination may vary.

An upstanding resilient supporting element 36 is held within the pocket 30 and is in the form of a hoop or loop. This hoop includes an upper hoop section or loop 37 and a lower hoop section or loop 38, which are formed separate. These hoop sections are formed from spring steel and are coated so that they will not rust. The upper
hoop section 37 has generally horizontal lower portions 39, carrying downwardly projecting extensions 40. The lower hoop portion 38 has upper generally horizontal portions 41, carrying upstanding extensions 42. The extensions 42 are arranged inwardly of the extensions 40.

The numeral 43 designates a reinforcing or coupling element, including a metal plate 44. This plate has its upper and lower edges bent or formed inwardly to provide flanges 45, 46 and 47 separated by slits 48. The flanges 45 and 46 are spaced from the plate 44 and are parallel to and with, while the flanges 47 are bent inwardly to substantially contact with the plate 44 and provide closed sleeves 47. The horizontal portions 39 of the upper hoop portion 37 extend behind flanges 45 and also extend through the sleeves 47, while the extensions 40 project transversely across the plate 44 and pass behind the flanges 46. The horizontal portions 41 of the lower hoop section extend behind the lower flanges 45 and through the lower sleeves 47 and their extensions 42 project upwardly across the plate 44 and the free ends of these extensions 41 are arranged behind the upper flange 46. The extensions 40 are disposed outwardly of the extensions 42 and the extensions 40 are connected by a coupling 49, so that the horizontal portions 39 cannot move from each other. The coupling 49 has its body portion arranged within an opening 50 formed in the plate 44, so that the coupling does not project beyond the face of the plate or its flanges, thereby providing a thin construction. Further, by arranging the coupling within the opening 50, the coupling cannot move for any considerable distance horizontally with relation to the plate 44. Since the extensions 42 are arranged inwardly of the extensions 40, it is thus seen that the extensions 40 hold the horizontal portions 41 against horizontal movement in an outward direction.

It is thus seen that a resilient hoop is provided, including upper and lower hoop sections connected by horizontal U-shaped torsional spring portions including the horizontal portions 39 and 41 and their extensions.

A hoop 38 may be arranged within the lower hoop section and held in place by a line of stitching 39, but this hoop and line of stitching may be omitted.

The hoop is placed within the pocket 30 and the upper hoop portion 37 preferably has substantially the same vertical dimension as the band 23. The hoop section 38 may be larger than the hoop section 37. The U-shaped connecting portions between the upper and lower hoop sections including horizontal portions 39 and 41, and the coupling or reinforcing element 43, are arranged substantially at the line of bending or slooping of the wearer, indicated at "B," and these U-shaped connecting portions are beneath and adjacent to the bottom edge of the band 23.

The upper hoop section 37 is held centered by lines of stitching 51 disposed inwardly of the same, while the lower hoop section 38 is held centered by lines of stitching 52 disposed inwardly of the same. At its bottom, the lower hoop section 38 bears against a line of stitching 53, while the upper hoop section 37, at its top, bears against the top folded edge of the pocket 30. A horizontal line of stitching 54 passing through layers 51 and 52 is preferably arranged at the top of the upper hoop portion 37. When the hoop is placed in position within the pocket and bears against the stitching 53 and top edge of the pocket, the hoop is under compression so that it tends to hold the panel 26 raised and flat so that it will remain next to the wearer.

The hoop sections 37 and 38 are vertically resilient and will permit of slight vertical movements of the front panel 26. The pocket 30 extends horizontally beyond the hoop sections 37 and 38, and slideably engage the sides of the hoop sections, so that the sides may move outwardly to permit of the hoop sections being vertically compressed. When the user bends forwardly, Figure 2, the upper hoop section 37 is bent forwardly, and the hoop extension 37 toward the hoop section 38 until the free ends of these hoop sections meet, without liability of the resilient element being broken. It is thus seen that the horizontal portions 39 and 41 of the upper and lower hoop sections have the torsional action when the upper hoop section is swung downwardly, and the plate 44 remains parallel or flat with the body during the downward swinging movement of the hoop section 37, thus avoiding discomfort to the user. It is thus seen that the resilient element provides the maximum bending at the point of the body where the maximum bending of the body occurs.

In Figure 13, a modified form of resilient hoop is shown. This hoop includes upper and lower hoop sections 37' and 38' formed from a single section of spring steel wire, the ends of which are secured together at the top by a coupling 55. The hoop sections 37' and 38' are connected by inwardly facing horizontal U-shaped torsional spring portions 56, including horizontal portions 57 and 58. The horizontal portions 57 are held within the upper flanges 45 and 47, while the horizontal portions 58 are held within the lower flanges 45 and 47. The ends 59 of the U-shaped portions 56 form vertical extensions contacting with the face of the plate 44, engaged behind the flanges 45, and these ends are connected by a coupling 59'. The sides or portions 51 and 58 are connected by the flanges which retain the portions 57 and 58 parallel. All other parts remain identical with those shown and described in connection with the first form of the invention. It is apparent that I have provided a construction which eliminates sharp bending of the spring steel wire, which would tend to cause the same to break in use.

In connection with the second form of the invention, the upper and lower hoop sections 37' and 38' are vertically resilient and hence may be compressed to permit of slight vertical adjustments of the front panel 26. The upper hoop section 37' is bent forwardly, a torsional action is applied to the horizontal portions 57 and the plate 44 of the coupling 43 is swung downwardly, as explained in connection with the modified form of the invention, and a resilient torsional action is applied to the horizontal portions 57 and 58. It is thus seen that the U-shaped portions 56 provide a long construction to receive the resilient torsional action, and this torsional...
action being distributed over a considerable length of wire, the tendency to break the wire due to local bending in the upper portion of the upper horizontal torsional portions includ- ing upper and lower members and transverse por-
tions, the upper members forming the bottom 75 of the upper hoop and the lower members form-
ing the top of the lower hoop, said hoops being vertically resilient in use, and the same upon one side of the U-shaped portions and having flanges formed thereon forming means for holding the upper and lower members, the trans-
verse portions engaging the plate.

4. A resilient supporting element to be applied to a garment for holding the same in position upon the user, comprising separate upper and lower hoop sections, including generally hori-
Zontal resilient torsional members, the torsional members forming the bottom of the upper hoop section and the top of the lower hoop section, the torsional members of the upper hoop section having extensions projecting downwardly and the torsional members of the lower hoop section having extensions projecting upwardly, the downwardly projecting extensions being separate from the upwardly projecting extensions, and a plate arranged upon one side of the generally horizontal torsional members and having holding means for receiving such members, the extensions being arranged to engage the face of the plate.

5. A resilient supporting element to be applied to a garment for holding the same in position upon the user, comprising separate upper and lower hoop sections including generally horizontal torsional members and generally vertical parts connecting the torsional members and formed integral therewith, and a plate arranged upon one side of the generally horizontal torsional members and having holding means for receiving the members, said parts engaging the face of the plate.

6. A girdle or like garment comprising a flexible body portion, a band having transverse stiffen-
ing ribs secured to the top of the body portion and having its forward ends spaced at the front of the body portion, and a vertically resilient supporting element including superposed upper and lower hoop sections and generally U-shaped tor-
sional members connecting the upper and lower hoop sections said hoop sections being vertically resilient in use, the upper hoop section having its bottom terminating substantially at the exte-


7. A girdle or like garment comprising a flexible body portion, band means having transverse stiffening ribs secured to the upper portion of the body portion and having its forward ends spaced at the front of the body portion, and a vertically resilient supporting element including superposed upper and lower hoop sections and substantially horizontal generally U-shaped torsional members connecting the upper and lower hoop sections said hoop sections being vertically resilient in use, the upper hoop section extending between the forward ends of the band means and serving to support the front portion of the garment, the U-shaped members being arranged substantially at the elevation of the maximum bending portion of the waist, and means for securing the hoop sections in position upon the front portion of the garment.

8. A girdle or like garment comprising a flexible body portion, and a vertically resilient supporting element including upper and lower hoop sections and substantially horizontal generally U-shaped torsional members connecting the top and bottom of the lower and upper hoop sections, respectively, the upper hoop section serving to support the upper end of a portion of the body portion the hoop sections being vertically resil-
lent in use, the generally U-shaped members being arranged substantially at the elevation of the maximum bending portion of the waist, and means for securing the hoop sections in position upon the body portion of the garment.

9. A girdle or like garment comprising a flexible body portion and flexible front panel secured to the body portion, elastic band means secured to the top of the body portion and front panel and having short upstanding stiffening ribs, the band means terminating substantially at the front panel, means forming a pocket upon the front panel, a vertically resilient supporting element mounted within the pocket and including suprased upper and lower hoops and substantially horizontal torsional members connecting the hoops, the upper hoop serving to support the top of the front panel, the torsional members being arranged substantially at the elevation of the maximum bending portion of the waist, and means for holding the upper and lower hoop sections in place within the pocket and permitting the opposite sides of each hoop section to spread when the hoop section is compressed said hoop sections being vertically resilient in use.

10. A girdle or like garment comprising a flexible body portion having an upper end which is depressed by the movement of the wearer, resilient supporting means to oppose the downward movement of the upper end, said resilient supporting means including superposed upper and lower frame sections, said frame sections being resilient in use, each frame section including sides, the upper frame section including a top and the lower frame section including a bottom generally U-shaped substantially horizontally resilient torsional members, said torsional members including upper and lower sides, said upper sides forming the bottom of the upper resilient frame section and said lower sides forming the top of the lower resilient frame section, said frame sections being vertically resilient when compressed, said torsional members connecting frame sections, and means for slidably mounting the sides of each frame section upon the body portion for outward movement in a generally horizontal direction, the arrangement being such that each frame section may be vertically compressed.

11. A girdle or like garment comprising a flexible body portion having an upper end which is depressed by the movement of the wearer, standing resilient means to oppose the downward movement of the upper end, said resilient means including superposed upper and lower frame sections, said frame sections being resilient in use, resilient torsional means connecting the bottom of the upper frame section with the top of the lower frame section, the resilient torsional means being arranged near the elevation of that portion of the wearer having the maximum stooping action, and means for slidably mounting the sides of each frame section upon the body portion for outward movement in a generally horizontal direction, the arrangement being such that each frame section may be vertically compressed.

12. A girdle or like garment comprising a flexible body portion having an upper end which is depressed by the movement of the wearer, up-

standing resilient supporting means to oppose the downward movement of the upper end, said resilient supporting means including superposed upper and lower frame sections, said frame sections being resilient in use, each frame section including sides, the upper frame section including a top and the lower frame section including a bottom generally U-shaped substantially horizontally resilient torsional members, said torsional members including upper and lower sides, said upper sides forming the bottom of the upper frame section and said lower sides forming the top of the lower frame section, said frame sections being resilient in use, each frame section including sides, the upper frame section including a top and the lower frame section including a bottom generally U-shaped substantially horizontally resilient torsional members, said torsional members including upper and lower sides, said upper sides forming the bottom of the upper resilient frame section and said lower sides forming the top of the lower resilient frame section, said frame sections being vertically resilient when compressed, said torsional members connecting frame sections, and means for slidably mounting the sides of each frame section upon the body portion for outward movement in a generally horizontal direction, the arrangement being such that each frame section may be vertically compressed.

13. A girdle or like garment comprising a flexible body portion having an upper end which is depressed by the movement of the wearer, a pocket formed upon the body portion and extending adjacent to the upper end, standing resilient supporting means mounted within the pocket, said resilient means comprising superposed upper and lower frame sections, said frame sections being vertically resilient in use each frame section including sides, the pocket extending horizontally beyond the sides of each frame section and having slidable engagement with such sides so that such sides may move outwardly when the frame section is vertically compressed, means for retaining each frame section in place within the pocket without disturbing the outward movement of the sides of such frame section, and resilient torsional means connecting the sides of the upper frame section with the sides of the lower frame section.

14. A girdle or like garment comprising a flexible body portion having an upper end which is depressed by the movement of the wearer, a pocket formed upon the body portion and extending adjacent to the upper end, resilient means arranged within the pocket to oppose the downward movement of such upper end, said resilient means including an upper frame section and a lower frame section, said frame sections being vertically resilient in use, each frame section including sides and being resilient in use the sides of each frame section being free from attachment with the pocket which would prevent such sides moving outwardly when vertically compressed, and resilient torsional means connecting the sides of the upper resilient frame section with the sides of the lower resilient frame section.

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